AD640125

Technical Report

AD 640 125

MECHANIZATION STUDY
OF THE ARMY STUDY
DOCUMENTATION AND
INFORMATION RETRIEVAL SYSTEM,
U.S. ARMY LIBRARY, WASHINGTON, D.C.

Submitted to

Defense Supply Agency
Defense Documentation Center
Cameron Station, Virginia

by

Booz, Allen Applied Research Inc.
4733 Bethesda Avenue
Bethesda, Maryland 20014

Under Contract No. DSA-7-15489

BAARINC Report No. 914-1-30

Setpember 1966

BOOZ·ALLEN APPLIED RESEARCH INC.

WASHINGTON
CLEVELAND
CHICAGO
LOS ANGELES

20040826017

ABSTRACT

The objectives of the Army Study Documentation and Information Retrieval System (ASDIRS) are to provide a central library of Army studies readily accessible in the Pentagon and a published periodic book catalog of Army studies. ASDIRS consists of the authors, storers, and users of the studies. At the present time, a bibliographic, quarterly catalog of Army studies and a permuted descriptor/title index are provided from input to the system. The catalog of Army studies is produced using an IBM 1401 computer, and the permuted descriptor/title index to the catalog is produced using an IBM 7090 computer. The central library of Army studies will provide a reference card file and the Termatrex retrieval system for easy subject access to the collection. The bibliographic catalog is distributed Army-wide and has been favorably received.

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BAFRINC

I. SUMMARY

The Army Study Documentation and Information Retrieval System (ASDIRS), located in the Army Library, Pentagon, became operational in April 1964. The objectives * of ASDIRS are to provide a central library of Army studies readily accessible in the Pentagon and a published periodic book catalog of Army studies.

The central library will provide the following: (1) a bibliographic reference card catalog, (2) a search mechanism that will enable a researcher to identify quickly those studies which have a bearing on a specific subject area, (3) limited microfilm reader/printer service (projected), (4) access to studies, and (5) limited special bibliography service.

The periodic catalog of Army studies will provide the following bibliographic information on each study completed or under way: (1) study categories and subcategories; (2) initiating office, study sponsor, and study agency; (3) dates: starting, completion, and availability; (4) title, abstract, and document number; (5) time frame; (6) study

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* Army Regulation 1-28, 5 October 1964

BAAP:NC

descriptors; and (7) what the study contributes to.

Procedures that have been outlined so that the objectives of ASDIRS will be met are as follows: (1) to index, catalog, abstract, store, and announce availability of Army studies; (2) to provide bibliographic service, central literature searching, and reading facilities; (3) to disseminate periodically a catalog of Army studies to include descriptions of studies completed or under way; and (4) to develop documentation standards for Army studies.

The central library of Army studies provides a reference card file (see Figure 1 for sample) and the Termatrex retrieval system for easy subject access to the collection. A quarterly catalog of Army studies is produced using the Army Information and Data Systems Command (AIDS) IBM 1401 computer. The permuted descripter/title index to the catalog is produced on the Army's Strategic Tactics and Analysis Group's IBM 7090 computer.

The collection (as of January 1966) contains some 450 completed studies (up to and including Secret items) and 850 abstract cards on assigned projects. The collection is growing at the rate of 100 per month. The studies are not scientific or technically oriented but are significant in the areas of plans, policies, strategy, doctrine, materiel, and personnel in the Army. A staff of three services this collection.

ASDIRS NO.:

Study Category: Development Studies-Firepower-Weapons (341)

Initiated By: Secretary of the Army   Starting Date: June 1963

Study Sponsor: ACSFOR   Completion Date: November 1963

Study Agency: Combat Developments Command, Ft. Belvoir, Va.   Availability Date: February 1964

Reference No:

Title: Army Requirements for Direct Fire Weapons Systems - ARDFIRE (U)

Abstract: Cost-effectiveness analysis of some 125 direct fire weapons systems, develops optimum
family and mixes for defeat of mechanized forces. 14 division-level tactical situations. dual
weapons examined in a dual situation, least-cost sets of weapons developed, appropriate it: played
in two computer simulations to yield a "best set," which is then evaluated against stated require-
ments. 36 specific conclusions include a preferred family, an alternate family, and R&D actions
deemed necessary to correct apparent shortcomings. Annexes include examination of threat in Europe
and Southeast Asia, expected enemy and friendly weapons, equipment, organization and doctrine,
target acquisition, and a historical survey. (Published in 7 vols., plus one Supplemental Report
(unnumbered volume) which has special distribution)

Time Frame: 1965-1970

Study Descriptors: Antitank weapons, SHILLELAGH, Requirements, Aircraft, Simulation, Europe,
Cost effectiveness, Effectiveness measures, Weapons, Physical characteristics, Evaluation,
Computer applications, Research and Development, Target acquisition, Mechanized forces,
Southeast Asia.

Classification: SECRET AND TOP SECRET   Contributes to: Weapon system
                                                            development, QMR, RODAC doctrine
                                                            and organization

FIGURE 1

Format

Bibliographic Data

(with sample entries)

The total 1,300 items are used by project planners and managers and other qualified DoD personnel and DoD contractors. Copies of the abstract cards will be provided, but hard copies of the studies are neither loaned, reproduced, nor distributed from ASDIRS. Requests are usually received by telephone or personal visit. Users are permitted to perform their own searches with the Termatrex equipment.

The combined photographic and semiautomated methods have proven quite economical. Users and operators of the ASDIRS and the bibliographic catalog are satisfied with the system and have encountered no major problems.

II. MECHANIZATION

ASDIRS consists of the authors, the storers, and the users of
the studies. (See Figure 2 for detailed operation of ASDIRS.) From
input to the system, a catalog of Army studies and permuted descrip-
tor/title index are provided. Input procedures and format of the out-
puts are discussed below.

1. DESCRIPTION OF PROCESSES

(1) Input Procedures

1. The author prepares a 10-1/2 x 8 sheet

for each new study assigned, and another sheet

at the completion of the study.

2. Individual entries in the Bibliographic

Data format (see Figure 1) will be made as

follows:

(1) ASDIRS number. Leave blank;
Army Library will assign a control
number.

(2) Study category-subcategory.
Record the study category and sub-
category (or subcategories) that
best apply. Choose from the num-
bered categories and subcategories
on the ARMITERM Basic Index
(Appendix A). (Example: Develop-
ment studies-Firepower-Weapons).
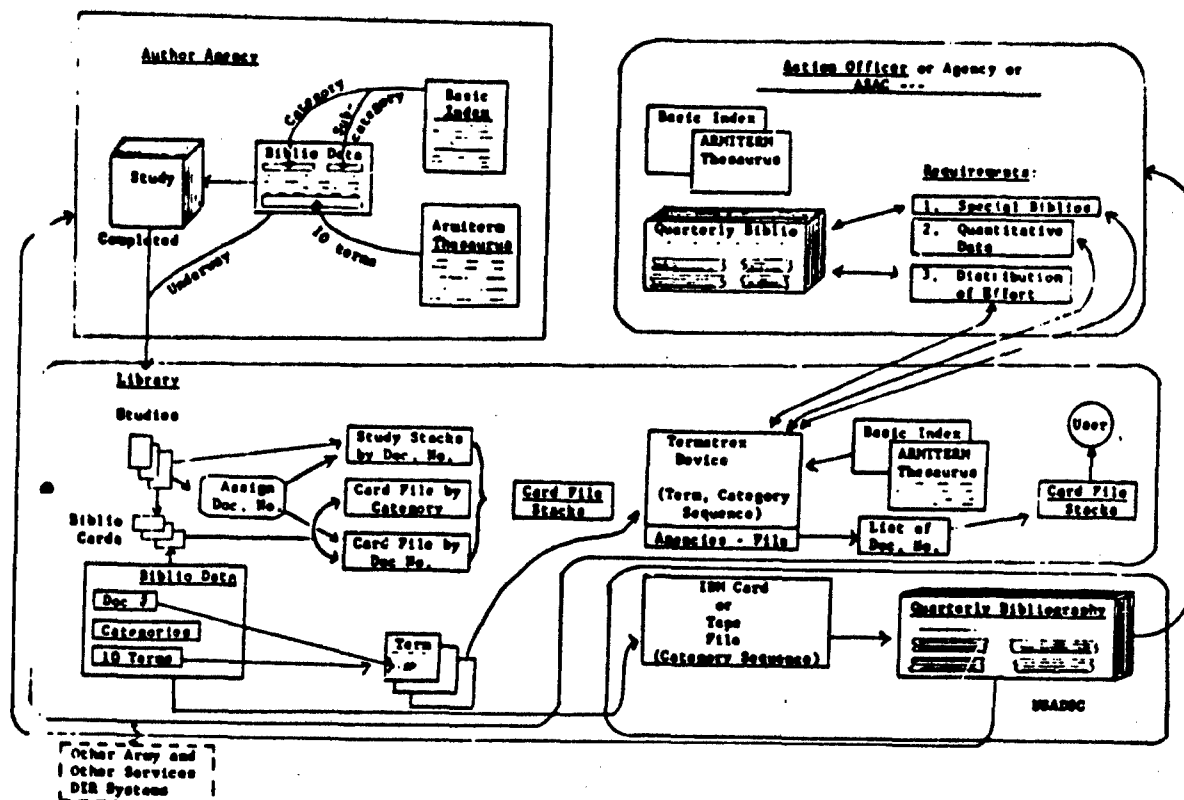
FIGURE 2

Detailed Operation of the ASDIRS

(3) Study category-subcategory number.
Record the pertinent study category-sub-
category number(s) next to the chosen
study category-subcategory. (Example:
Development studies-Firepower-Weapons
(341)).

(4) Initiated by. Record agency, office,
or title of individual who directed that this
study be conducted.

(5) Study sponsor. Insert organizational
title of Army staff element or field com-
mand with responsibility to monitor the
study.

(6) Study agency. Insert agency actually
conducting the study.

(7) Starting date. Record month and
year the study was or is to be started.

(8) Completion date. Record month and
year the study was or is to be completed.

(9) Availability date. Insert month and
year the study was or is expected to be
available to office designated in "Initiated
by."

(10) Reference number. Add identifying
number that the study agency assigned to
the study (if applicable). (Example: RAC-
TP-107.)

(11) Title

(12) Abstract. In 100 words or less,
outline planned or actual scope and
method, key results, and purpose. Pre-
pare in such a manner as to give the
reader of a bibliography containing the
study sufficient information to enable him

to decide whether he needs the study. The
abstract will be unclassified.

(13) Time frame. Cite the "period" of the
study--i.e., current, 1964-67, 1970-80, etc.

(14) Study descriptors. Record 10 terms
from the Thesaurus of ARMITERMS (Appen-
dix B) that best describe the content of the
study. The choice of terms will determine
the efficiency of future retrieval, once the
study is incorporated in ASDIRS. Hence,
the Guidelines for Use of the Thesaurus of
ARMITERMS (see Appendix B) should be
followed carefully.

(15) Classification. Insert security
classification of the study. Include in-
dication of special security required.

(16) Contributes to. Record up to five
"actions" that this study is intended to
contribute to: i.e., paragraph in Combat
Developments Objective Guide (CDOG),
Program Change Proposal (PCP), other
study, Army Plan, etc.

When the study is completed, the author need only to

update, correct, or add to this bibliographic data and

forward the revised form with a copy of the completed study.

3. The 10-1/2 x 8 updated bibliographic data sheet

is forwarded to the Army Library, TAGO (ASDIRS).

4. The Library assigns a study number.

5. Photo-offset copies of the 10-1/2 x 8 bibliographic

data sheet are made, reduced onto 8 x 5 cards (see Figure 1).

6. The 8 x 5 cards are filed in order by the study number, broad subject categories, and titles.

7. New descriptor terms of the author are reviewed for possible incorporation in the Thesaurus, which is under continuous review.

At present there are approximately 600 terms in the thesaurus, with 10-15 terms typically assigned to each document. Terms have been added to the original ARMITERM Thesaurus (Appendix B) only after careful consideration. Terms which the authors use and which are not already included in the ARMITERM Thesaurus are underlined for special attention and review by the Librarian. Thesaurus development will include the addition of term definitions as used by ASDIRS. Due to the nature of the studies included in the collection, many terms must be defined by their use in this system rather than by their general usage. (Examples are forces, movement, satellites.)

8. Using the bibliographic data cards, Termatrex descriptor cards are prepared for use in retrieval of the study.

9. Some of the information on the 8 x 5 bibliographic

data cards is coded and transferred to the CSAIDS-C

Form 53 (keypunch form--see Figure 3).

10.   The Form 53 is forwarded to AIDS for keypunching

and preparation of the computer printout of the index to the

quarterly bibliographic catalog.

(2)   Output

A Confidential bibliographic catalog is published quarterly

in three parts.   Part III is printed from the same negatives used

in reducing the 10-1/2 x 8 sheets to an 8 x 5 card and is arranged

by document (i.e., study) number (two items to a page).

Part I is an index by broad category, with classification

and category number.

Part II is a modified (permuted descriptor/title) KWIC

index (more subject than title approach).   This section provides

for further depth indexing than Part I.

The catalog is cumulated each quarter, with a final annual

cumulation.   It is hoped that a five-year cumulation will be possible.

The catalog is distributed Army-wide and has been favorably

received.

FIGURE 3
Keypunch Form

III. EQUIPMENT AND COSTS

Termatrex System (punch, reader, and Termatrex cards and card holders)

Approximately $5,000 for entire system (owned by ASDIRS).

IBM Sorter 084

Purchased by AIDS for $10,600. Used by ASDIRS quarterly for file updating, which involves 1 hour per quarter (20 minutes per month).

IBM Punch 026

Purchased by AIDS for $4,050.50. Used quarterly by ASDIRS for file updating, which involves 2 hours per quarter (40 minutes per month).

IBM Verifier Model 056

Purchased by AIDS for $2,888.50. Used quarterly by ASDIRS for file updating, which takes 2 hours per quarter (40 minutes per month).

IBM Collator Model 188

Purchased by AIDS for $32,860. Used quarterly by ASDIRS for file updating, which takes 30 minutes per quarter (10 minutes per month).

IBM 1401 Computer

Purchased by AIDS for $131,100. Used quarterly by ASDIRS for 75 minutes per quarter (25 minutes per month). File updating takes 15 minutes per quarter (5 minutes per month); file printing takes 1 hour per quarter (20 minutes per month).

IBM 7090 Computer (for permuted descriptor/title index)

Purchased by Department of the Army for $3 million--located at Strategic Tactics and Analysis Group (STAG). Used quarterly by ASDIRS for 21 minutes per quarter (7 minutes per month). File updating takes 15 minutes per quarter (5 minutes per month); file formatting takes 6 minutes per quarter (2 minutes per month). Printing is done on the AIDS 1401.

For additional cost factors, see Appendix C.

BIBLIOGRAPHY

<u>Army Study Documentation and Information Retrieval System (ASDIRS)</u>,
U.S. Army Regulation 1-28, dated 5 October 1964.

ARMITERM Basic Index

Basic Index for Army Studies
Definitions

Operational: Studies which address the total spectrum of possible types of military *action*, or operations, to include: psychological warfare, military assistance, counterinsurgency, passive and active defense, and offense. Those studies which deal about equally with two or more alternative types of military operations are categorized as *general*. Those which primarily address *one* of the specified types of operations are categorized under *one* of the following subcategories:

General: Studies which develop an entire spectrum of expected operational scenarios.

Psychological: Studies of the possible alternative useful means of employing psychological means as a "weapon," to include appeals, symbols, broadcast and visual methods.

Military Assistance: Studies of the use of military assistance (service, civic action, equipment, training, education) as a means of maintaining an acceptable military capability balance within and between nations, countries, blocs and alliances.

Counterinsurgency: Studies of the use of means to counter-revolution, insurgency, underground movements, guerrilla activity, and other paramilitary actions short of a state of declared warfare.

Defense: Studies of the strategic defensive measures available and necessary to meet open attack of the United States and its allies by a potential enemy.

Offense: Studies of the strategic offensive measures available and necessary to counter open attack of the United States and its allies by a potential enemy.

Development Studies: Those studies which analyze the relatively specific alternative ways and means of achieving victory in combat. As a body, these studies include separate and collective analyses of the doctrine, organizations, and equipment to be used on the battlefield and of the attendant resources required to achieve necessary and sufficient effectiveness. Subject areas examined include intelligence, force structure, firepower, mobility, command control and communications, personnel, training, and logistics. (Sometimes called systems analysis, cost-effectiveness study, operations research study, operational analysis, operational evaluation, combat development study.)

General: Those development studies which deal about equally with two or more of the categories described below are categorized as DS, General.

Intelligence: Those DS which primarily address combat surveillance and target acquisition, combat intelligence, and security, and the necessary doctrine, organization and equipment alternatives necessary and sufficient to approaching optimum expected performance.

Force Structure: Those DS which primarily address the organizational and operational alternatives necessary and sufficient to the fielding of optimally tailored units of combat force. These studies primarily address ...e, shape, manning, equipment, command and support requirements (personnel, training, logistics) of separate battalion, brigade, regiment, division, corps, and army units and aggregations thereof.

General: Force structure studies which address, about equally, organizational structure *and* operational employment.

Organizational: Force structure studies which primarily address alternative organizational structures.

Thesaurus of ARMITERMS

1. *General.* The attached list of terms, commonly found in Army Studies, is designed to be a predetermined source of words to be included under Study Descriptors section of Bibliographic Data and subsequently to be used as a search and retrieval mechanism. The list, in its present form is considered adequate; however, provisions for the introduction of new ARMITERMS have been made as discussed below. While the Thesaurus, in its present form is nothing more than a list, a more refined version, to include relationships, synonyms, etc., will be developed as experience is gained with ASDIRS and if warranted.

2. *Guidelines for use of the Thesaurus of ARMITERMS.* *a.* Format for Bibliographic Data (appendix II) calls for recording 10 terms from the Thesaurus of ARMITERMS under the entry: Study of Descriptors. The following technique will be *normally* employed:

    (1) Pick *six* terms from the Thesaurus, giving priority to the terms found under the appropriate category/subcategory. Arrange these in order of importance.

    (2) Pick *two* terms from the Methodological Studies category.

    (3) Pick *two* terms from the Data Retrieval category.

b. Options.

    (1) New terms: If a term which the author/agency feels is *highly descriptive* of the study is not found in the Thesaurus, include this term *in addition to* the ten chosen from the Thesaurus, and *underline* it. (NOTE: Terms may be combined, if not already done so in in this Basic Index, when it is felt that a *single* concept or idea can best be indicated by so doing, e.g., rather than use "reserve" and "unit" if the idea entertained is "reserve unit," use the already combined term found in this Thesaurus of ARMITERMS "reserve units," or again if the idea entertained is "balance of power" and the only word found in the Thesaurus is "balance," submit the new suggested term, *"balance of power"*; similarly "area handbook," "area study," "foreign policy," "arms control," "economic environment," "exterior ballistics," "fixed round," "zone of interior," etc.).

    (2) Methodological studies: Since this class of study emphasizes analytical technique rather than substantive evaluation, choose terms as follows:

      (*a*) Pick *six* terms from the Methodological Studies category.

      (*b*) Pick *four* terms from elsewhere in the Thesaurus.

c. Studies will be "filed" in the ASDIRS search and retrieval device by ARMITERM. Hence, when a list of studies addressing a given subject is desired, choose "search" terms from the latest edition of the Thesaurus of ARMITERMS when composing search requests.

Development Studies

Development Studies, General

(All terms listed under Intelligence, Force Structure, Firepower, Mobility, Command Control and Communications, Personnel, Training, and Logistics apply.)

DS, Intelligence

aerial	ECM	night vision
aircraft	electronics	operations
camera	geodesy	organizations
COMINT	ground	photograph
combat	identification	safeguarding information
communication	IFFMarkXXX	security
concepts	imagery	sensors
counterintelligence	industrial	surveillance
countersurveillance	information	systems
detection	mapping	target acquisition
doctrine	material	technical
DroneMQM-58A	mobility	TIIF
ECCM	MOHAWK	weather

DS, Force Structure

administrative	engineer	Pacific
administration	Europe	plans
air assault	field artillery	psychological
airborne	force basis	remote area
air defense	forces	requirements
Alaska	future	reserve units
amphibious	general	ROAD
armor	infantry	roles and missions
armored cavalry regiment	Korea	round-out
army aviation	land warfare	separate battalions
Brigades	logistic	service
CBR	mechanized	SouCom
combat	military police	Special Forces
combatant	military sciences	special warfare
combined-arms	missile	STRICOM
command	mobility	structures
communications-electronics	nuclear	support
concepts	operating	temperate zone
counterinsurgency	operational concepts	unconventional
current	operational parts	underdeveloped
division	operations	
doctrine	organizations	

COST FACTORS

The following figures have been established by the Management Control Office for use in estimating the cost of developing and maintaining future systems efforts within the Command. A figure of 8 percent has been added to the average civilian salary to cover the contribution of USAIDSCOM to FICA. Retirement, etc. No effort has been made to evaluate or include overhead costs.

COSTS:

1. Systems Analyst--$900 per man-month or $5.60 per man-hour.

2. Programmer--$750 per man-month or $4.70 per man-hour.

3. Production Control Office--$680 per man-month or $4.25 per man-hour.

4. Operations--Included $3.00 per machine hour for operator.

    7080 (160K) $330 per machine hour

    1460 (12K) $ 65 per machine hour

    1401 C5 (12K) $ 55 per machine hour

    1401 C3 (4K) $ 35 per machine hour

    1401 G3 (4K) $ 20 per machine hour.

5. Keypunch--$3 per hour for machine and operator.

6. EAM--$6 per hour for machine and operator.

7. Reports Production Branch--$3.25 per man-hour.

KEYPUNCH TIMING:

1. Good Document--6,000 keystrokes per hour.

2. Poor Document--5,000 keystrokes per hour.

DOCUMENT CONTROL DATA · R&D

(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)

1 ORIGINATING ACTIVITY *(Corporate author)*	2a. REPORT SECURITY CLASSIFICATION
BOOZ · ALLEN APPLIED RESEARCH, INC.	Unclassified
4733 Bethesda Avenue	2b. GROUP
Bethesda, Maryland 20014	

3 REPORT TITLE

Mechanization Study of the Army Study Documentation and Information Retrieval System, U.S. Army Library, Washington, D. C.

4 DESCRIPTIVE NOTES *(Type of report and inclusive dates)*

Final Report of on-site survey

5 AUTHOR(S) *(Last name, first name, initial)*

G. A. Kershaw, D. Crowder, J. E. Davis, E. G. Loges, E. Merendini, S. M. Thomas

6 REPORT DATE	7a. TOTAL NO. OF PAGES	7b. NO. OF REFS
September, 1966	29	1

8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S)
DSA-7-15489	914-1-30
b. PROJECT NO.	
c.	9b. OTHER REPORT NO(S) *(Any other numbers that may be assigned this report)*
d.	AD 640 125

10 AVAILABILITY LIMITATION NOTICES

Distribution of this Document is unlimited

11 SUPPLEMENTARY NOTES	12 SPONSORING MILITARY ACTIVITY
None	Defense Supply Agency
	Defense Documentation Center
	Cameron Station, Virginia

13 ABSTRACT

The objectives of the Army Study Documentation and Information Retrieval System(ASDIRS) are to provide a central library of Army studies readily accessible in the Pentagon. At the present time, a bibliographic quarterly catalog of Army studies and a permuted descriptor/title index are provided. The catalog of Army studies is produced using an IBM 1401 computer, and the permuted descriptor title index to the catalog is produced using an IBM 7090 computer. The central library of Army studies will provide a reference card file and the Termatrex retrieval system for easy subject access to the collection. The bibliographic catalog is distributed Army-wide and has been favorably received.

DD FORM 1473

14	KEY WORDS	LINK A		LINK B		LINK C	
		ROLE	WT	ROLE	WT	ROLE	WT
	Digital Computer						
	Information Retrieval						
	Libraries						
	Documentation						

INSTRUCTIONS

1. ORIGINATING ACTIVITY: Enter the name and address of the contractor, subcontractor, grantee, Department of Defense activity or other organization (corporate author) issuing the report.

2a. REPORT SECURITY CLASSIFICATION: Enter the overall security classification of the report. Indicate whether "Restricted Data" is included. Marking is to be in accordance with appropriate security regulations.

2b. GROUP: Automatic downgrading is specified in DoD Directive 5200.10 and Armed Forces Industrial Manual. Enter the group number. Also, when applicable, show that optional markings have been used for Group 3 and Group 4 as authorized.

3. REPORT TITLE: Enter the complete report title in all capital letters. Titles in all cases should be unclassified. If a meaningful title cannot be selected without classification, show title classification in all capitals in parenthesis immediately following the title.

4. DESCRIPTIVE NOTES: If appropriate, enter the type of report, e.g., interim, progress, summary, annual, or final. Give the inclusive dates when a specific reporting period is covered.

5. AUTHOR(S): Enter the name(s) of author(s) as shown on or in the report. Enter last name, first name, middle initial. If military, show rank and branch of service. The name of the principal author is an absolute minimum requirement.

6. REPORT DATE: Enter the date of the report as day, month, year, or month, year. If more than one date appears on the report, use date of publication.

7a. TOTAL NUMBER OF PAGES: The total page count should follow normal pagination procedures, i.e., enter the number of pages containing information.

7b. NUMBER OF REFERENCES: Enter the total number of references cited in the report.

8a. CONTRACT OR GRANT NUMBER: If appropriate, enter the applicable number of the contract or grant under which the report was written.

8b, 8c, & 8d. PROJECT NUMBER: Enter the appropriate military department identification, such as project number, subproject number, system numbers, task number, etc.

9a. ORIGINATOR'S REPORT NUMBER(S): Enter the official report number by which the document will be identified and controlled by the originating activity. This number must be unique to this report.

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10. AVAILABILITY LIMITATION NOTICES: Enter any limitations on further dissemination of the report, other than those

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.................."

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.................."

If the report has been furnished to the Office of Technical Services, Department of Commerce, for sale to the public, indicate this fact and enter the price, if known.

11. SUPPLEMENTARY NOTES: Use for additional explanatory notes.

12. SPONSORING MILITARY ACTIVITY: Enter the name of the departmental project office or laboratory sponsoring (paying for) the research and development. Include address.

13. ABSTRACT: Enter an abstract giving a brief and factual summary of the document indicative of the report, even though it may also appear elsewhere in the body of the technical report. If additional space is required, a continuation sheet shall be attached.

It is highly desirable that the abstract of classified reports be unclassified. Each paragraph of the abstract shall end with an indication of the military security classification of the information in the paragraph, represented as (TS), (S), (C), or (U).

There is no limitation on the length of the abstract. However, the suggested length is from 150 to 225 words.

14. KEY WORDS: Key words are technically meaningful terms or short phrases that characterize a report and may be used as index entries for cataloging the report. Key words must be selected so that no security classification is required. Identifiers, such as equipment model designation, trade name, military project code name, geographic location, may be used as key words but will be followed by an indication of technical context. The assignment of links, rules, and weights is optional.